DEVIN, R. M., Cand. Tech. Sci. (diss) "Investigation of Sealing of Journal Boxes with Roller Bearings for Railroad Rolling Stock," Moscow, 1961, 17 pp. (Moscow Inst. Railroad Transp. Engr.) 120 copies (KL Supp 12-61, 266).

DEVIN, R.M., inzh.

Selection of radial gap in axle box labyrinths having roller friction bearings. Vest. TSNII MPS 16 no.8:21-23 D '57.
(MIRA 11:1)

(Car axles)

DEVIN, R.M., inzh.

Planning and designing packing for car boxes with antifriction bearings. Vest. TSNII MPS 19 no.8:15-18 '60. (MIRA 13:12)
(Car axles)

DEVIN, R.M., kand. tekhn. nauk

Results of the test of the packing of locomotive axle equipment.
Trudy TSNII MPS no.295:33-40 '65. (MIRA 19:1)

KORNEYEVA, R.; DEVINA, A.

Establishing norms in enterprises is the basis for the planning of working capital. Fin.SSSR 23 no.5:37-42 My '62. (MIRA 15:5)
(Capital)

15-57-8-10387

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 8, p 3 (USSR)

AUTHORS: Mirskaya, M., Shestakov, M., Chudinova, I., Devingtal' V.

TITLE: N. P. Gerasimov (1898-1952) /N. P. Gerasimov (1898-1952)/

PERIODICAL: Uch. zap. Molotovsk. un-t, 1956, Vol 7, Nr 4, pp 279-281

ABSTRACT: Nikolay Pavlovich Gerasimov made a significant contribution to Soviet geology while occupying the chair of Historical Geology and Paleontology at Molotov University. He was distinguished for his work in the stratigraphy and paleontology of the Volga and Ural oil-bearing districts. Among his most important works is a monograph, "Geological Structure of the Eastern Oil-Bearing District" /(Western Slope of the Urals and Western Ural District), 1940/. The opening up of the

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15-57-8-10387

N. P. Gerasimov (1898-1952) (Cont.)

Severokamsk and Krasnokamsk oil fields is associated with the name of Gerasimov.

G. I. Denisova

Card 2/2

DEVINGTAL', Yu.V., Cand Phys Math Sci -- (diss) "Solution of certain problems for equations of mixed type." Perm', 1958 13 pp including cover (Min of Higher Education USSR. Perm' State Univ im A.M. Gor'kiy) 100 copies. Bibliography at end of text (10 titles) (KL, 29-58, 128)

AUTHOR: Devingtal, Yu.V. SOV/140-58-2-5/20

TITLE: On the Existence and Uniqueness of the Solution of a Problem of F.I.Frankl' (O sushchestvovanii i yedinstvennosti resheniya odnoy zadachi F.I.Franklya)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy Ministerstva vysshego obrazovaniya SSSR, Matematika, 1958, Nr 2, pp 39-51 (USSR)

ABSTRACT: The author uses the method of Morawetz [Ref 4] for proving the existence and uniqueness of the solution of the boundary value problem given by Frankl' [Ref 1] for the system

$$k(y)\frac{\partial u}{\partial x} = \frac{\partial v}{\partial y}, \qquad \frac{\partial u}{\partial y} = -\frac{\partial v}{\partial x}.$$

Here the author gives other assumptions about the boundary as Bitsadze [Ref 3] who treated the same problem in an earlier paper (proof of uniqueness).
There are 9 references, 6 of which are Soviet, 1 English, and 2 Swedish.

ASSOCIATION: Permskiy gosudarstvennyy universitet imeni A.M.Gor'kogo (Perm' State University imeni A.M.Gor'kiy)

SUBMITTED: October 4, 1957

Card 1/1

AUTHOR: Devingtal' Yu.V. 20-119-1-3/52

TITLE: On the Existence of the Solution of a Problem of F.I.Frankl' (O sushchestvovanii resheniya odnoy zadachi F.I.Franklya)

PERIODICAL: Doklady Akademii Nauk, 1958, Vol 119, Nr 1, pp 15-18 (USSR)

ABSTRACT: Recently the author [Ref 5] succeeded in proving the uniqueness of the solution under somewhat changed assumptions for the problem given by Frankl'[Ref 1] and already several times treated by Bitsadze [Ref 2,3]. By formulation of an auxiliary problem and on the roundabout way over an integral equation of Fredholm's type being equivalent to the Frankl' problem, in the present paper the author concludes from the uniqueness to the solvability of the (of course very complicated) integral equation and therewith he obtains formally the solution of the Frankl problem.
There are 7 references, 4 of which are Soviet.

ASSOCIATION: Permskiy gosudarstvennyy universitet im.A.M.Gor'kogo (Perm' State University im.A.M.Gor'kiy)

PRESENTED: October 14, 1957, by M.A.Lavrent'yev, Academician
SUBMITTED: September 21, 1957

Card 1/1

16(1)

AUTHOR: Devingtal', Yu.V. SOV/42-14-1-11/27

TITLE: Application of the Method of Successive Approximations for a Kind of Singular Integral Equations in Connection With the Solution of the Generalized Tricomi-Problem for the Equation of M.A.Lavrent'yev (Primeneniye metoda posledovatel'nykh priblizheniy k odnomu vidu singulyarnykh integral'nykh uravneniy v svyazi s resheniyem obobshchennoy zadachi Trikomi dlya uravneniya M.A.Lavrent'yeva)

PERIODICAL: Uspekhi matematicheskikh nauk, 1959, Vol 14, Nr 1, pp 169-176 (USSR)

ABSTRACT: The solution of the generalized Tricomi-problem (problem M, see Bitsadze [Ref 1]) for the Lavrent'yev equation $\frac{\partial^2 u}{\partial x^2} + \operatorname{sign} y \cdot \frac{\partial^2 u}{\partial y^2} = 0$ leads to the equation

$$(1) \quad \varphi(x) + \int_0^1 \frac{K(\lambda(x), t)}{t - \lambda(x)} \varphi(t)dt = \Phi(x),$$

where $\lambda(x)$ is a function continuous with the first derivatives, $\lambda(0) = 0$, $\lambda(1) < q < 1$, $\lambda(x_1) \neq \lambda(x_2)$ for $x_1 \neq x_2$. The author

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Application of the Method of Successive Approximations for a Kind of Singular Integral Equations in Connection With the Solution of the Generalized Tricomi-Problem for the Equation of M.A.Lavrent'yev

SOV/42-14-1-11/27

solves (1) under certain assumptions on the kernel by successive approximation, where the single approximations are obtained from Fredholm equations. The uniqueness of the obtained solution is proved. The author thanks L.I.Volkovyskiy for the leading of the work.
There is 1 Soviet reference.

SUBMITTED: July 6, 1957

16(1)

AUTHOR: Devingtal', Yu.V. SOV/42-14-1-12/27

TITLE: On the Question of Existence and Uniqueness of the Solution of the Problem of Frankl' (K voprosu o sushchestvovanii i yedinstvennosti resheniya zadachi Franklya)

PERIODICAL: Uspekhi matematicheskikh nauk, 1959, Vol 14, Nr 1, pp 177-182 (USSR)

ABSTRACT: The author shows that from the existence of a unique solution of the Frankl' problem [Ref 1] proved by Bitsadze [Ref 2,3] the existence and uniqueness of the solution of a similar problem can be concluded for the equation

$$k(y)\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0 , \quad k(y) = \operatorname{sign} y \cdot |y|^m , \quad m > 0 .$$

Here, except of one, the boundary conditions are the same as those of Frankl'. The author uses results of Holmgren [Ref 6] and Mikhlin [Ref 7].
There are 7 references, 6 of which are Soviet, and 1 Swedish.

SUBMITTED: April 8, 1957

Card 1/1

DEVINGTAL', Yuriy Vladimirovich; KHAVKIN, P.A., red.; YEZOV, G.M., tekhn. red.

[Present-day computer techniques in industry] Sovremennaia vychislitel'naia tekhnika v promyshlennosti. Perm', Permskoe knizhnoe izd-vo, 1963. 48 p. (MIRA 17:3)

L 24301-66 EWT(m) DIAAP

ACC NR: AI6006795 SOURCE CODE: UR/0386/66/003/001/0015/0021

AUTHOR: Zolin, L. S.; Kirillova, L. F.; Liu, Ch'ing-ch'iang; Nikitin, V. A.; Pantuyev, V. S.; Sviridov, V. A.; Strunov, L. N.; Khachaturyan, M. N.; Shafranova, M. G.; Korbel, Z.; Rob, L.; Devinski, P.; Zlatanov, Z.; Markov, P.; Khristov, L.; Chernev, Kh.; Dalkhazhav, N.; Tuvdendorzh, D.

ORG: [Zolin, Kirillova, Liu, Nikitin, Pantuyev, Sviridov, Strunov, Khachaturyan, Shafranova] Joint Institute of Nuclear Research, Dubna (Ob"yedinennyy institut yadernykh issledovaniy); [Korbel, Rob] Czechoslovakian Higher Technical School, Prague (Cheshskoye vysshcye tekhnicheskoye uchilishche); [Devinski, Zlatanov, Markov, Khristov, Chernev] Physics Institute, Bulgarian Academy of Sciences, Sofia (Fizicheskiy institut Bolgarskoy akademii nauk); [Dalkhazhav, Tuvdendorzh] Institute of Physics and Chemistry, Mongolian Academy of Sciences, Ulan Bator (Institut fiziki i khimii Mongol'skoy akademii nauk)

TITLE: Real part of the pn scattering amplitude in the energy interval 2--10 Gev

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 1, 1966, 15-21

TOPIC TAGS: proton scattering, neutron scattering, scattering amplitude, differential cross section, deuteron reaction

ABSTRACT: On the basis of experimental data obtained by the authors on elastic pd scattering in the energy interval 1--10 Gev, and information on pp scattering amplitude in this energy range, the authors determined the real part of the scattering

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L 24301-66

ACC NR: AP6006795

amplitude by means of an experiment involving registration of slow recoil deuterons from a film target of deuterated polyethylene 0.5--0.6 μ thick. The investigated range of the squared momentum transfer was $0.003 < |t| < 0.2$ (Gev/c)^2. Plots are presented of the differential cross sections vs. the square of the momentum transfer and an empirical formula is given for these plots. The value obtained for the total cross section of elastic pd scattering at 6 Gev is several times smaller than that measured by others. In the small-angle region of pd scattering, constructive interferences were observed between the Coulomb and nuclear scatterings. From the obtained real part of the pd scattering amplitude, and from a comparison of the obtained data with earlier measurements by the authors of the pp scattering amplitude of the same energies (ZhETF v. 50, 76, 1966), the estimated real part of the pn scattering amplitude is +0.2, -0.06, -0.45, and -0.40 for 2, 6, 8, and 10 Gev respectively. The small nonzero real part of the pn scattering amplitude agrees with data obtained at CERN (G. Bellettini et al., Internat. Conf on Elementary Particles, Oxford, 1965). Orig. art. has: 2 figures, 3 formulas, and 2 tables.

SUB CODE: 20/ SUBM DATE: 12Nov65/ ORIG REF: 005/ OTH REF: 005

Card 2/2

DEVINSKY, F.

DEVINSKY, F. New development in the mechanization of agriculture in the United States in 1956. p. 22.

Vol. 7, no. 1, Jan. 1957
MACHANISACE ZEMEDELSTVI
AGRICULTURE
Czechoslovakia

So: East European Accession, Vol. 6, No. 5, May 1957

DEVINSKI, F.

The air-cooled Diesel motor in agriculture.

p. 424. (Mechanesace Zemedlstvi. Vol. 7, No. 19, Oct. 1957, Praha, Czechoslovakia)

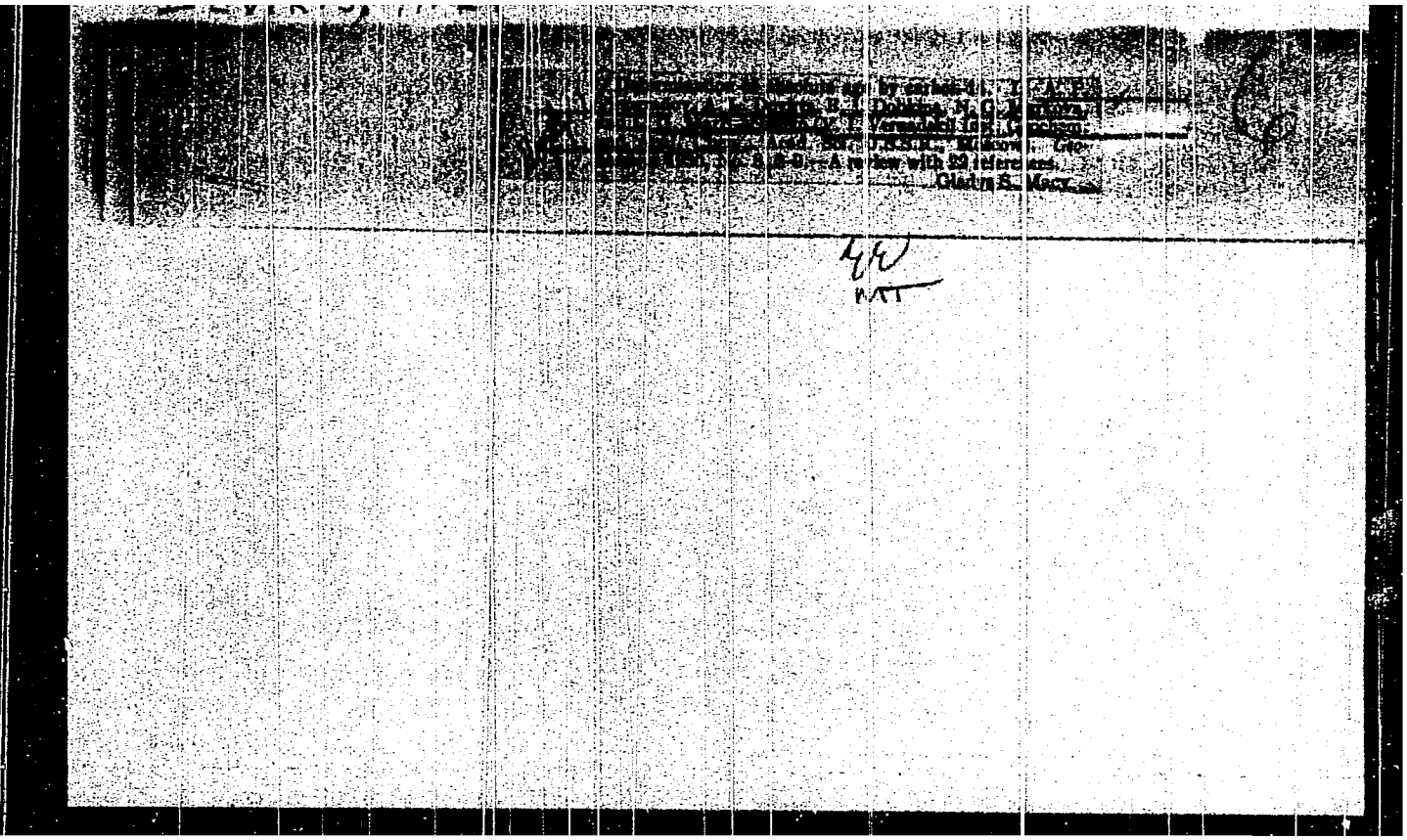
Monthly Index of East European Accession (EEAI) LC. Vol. 7, No. 2, February 1958

[illegible], J.

The air-cooled Diesel motor in agriculture.

P. L.L. (Cechoslovenske Letectvi. Vol. 7, [illegible], Praha, Czechoslovakia)

Monthly Index of East European Accession (MEEA) [illegible]. Vol. 7, [illegible],
February 1958



AUTHORS: Deviatkin, A. L., Chupakhin, M. S., Candidate of Technical Sciences

TITLE: International Symposium on C^{14}

PERIODICAL: Vestnik Akademii nauk SSSR, 1960, Nr 5, pp 81-82 (USSR)

TEXT: The symposium took place at the University of Groningen (Netherlands) from September 15 to September 20, 1959. It was attended by about 50 delegates from 12 countries. At present, a number of problems of geology, geochemistry, oceanology, and archeology is being solved by means of the radiocarbon method of dating. In order to be able to compare the results obtained by various laboratories throughout the world, a uniform international standard of present-day radiocarbon in the form of oxalic acid was recommended. A stock of this acid is in the U.S. National Bureau of Standards. For the purpose of establishing an ordered system of notation for all research results published with respect to C^{14}, it was recommended that each laboratory chose two letters of the alphabet for its articles and mentions the number of the sample. The Institut geokhimii i analiticheskoy khimii Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry of the Academy of Sciences of the USSR) decided that from 1960 onward the laboratory will, for the purpose of determining the age according to C^{14}, denote the samples by "Mo" and the corresponding number.

Card 1/1

VINOGRADOV, A.P., akademik; DEVIRTS, A.L.; DOBKINA, E.I.; MARKOVA, N.G.; MARTISHCHENKO, L.G.; MERGASOV, G.G., red. izd-va; POLYAKOVA, T.V., tekhn. red.

[Determination of absolute age by C^{14} with the help of a proportional counter; description of the method of construction and results] Opredelenie absoliutnogo vozrasta po C^{14} pri pomoshchi proportsional'nogo schetchika; opisanie metoda konstruktsii i rezul'tatov. Moskva, Izd-vo Akad. nauk SSSR, 1961. 57 p. (MIRA 14:8)

(Geological time)

VINOGRADOV, A.P., akad.; DEVIRTS, A.L.; DOBKINA, E.I.; MARKOVA, N.G.; MARTISHCHENKO, L.G.; NERGASOV, G.G., red. izd-va; POLYAKOVA, T.V., tekhn. red.

[Determination of absolute age by C^{14} using a proportional counter; description of the construction method and results] (predelenie absoliutnogo vozrasta po C^{14} pri pomoshchi proportsional'nogo schetchika; opisanie metoda konstruktsii i rezul'tatov. Moskva, Izd-vo Akad. nauk SSSR, 1961. 57 p. (MIRA 14:11)
(Radiocarbon dating)

21575

S/020/61/137/003/029/03[illegible]
B103/B208

27.0000 4112
21.6090

AUTHORS: Vinogradov, A. P., Academician, Devirts, A. L., and Dobkina, E. I.

TITLE: Increase of the content of active carbon due to nuclear explosions

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 3, 1961, 685-691

TEXT: The authors studied the C^{14} content in the wood of certain annual rings in the ash tree (Fraxinus excelsior) to determine the concentration of C^{14} in the atmosphere of the respective years. Recently it has been found (Ref. 1: O. I. Leypunskiy, Atomnaya energiya, 4, no. 1, 63, 1958, Ref. 2: A. D. Sakharov, ibid, 4, no. 6, 576) that not only long-lived isotopes, such as Sr^{90}, but also C^{14} ($T_{1/2}$ = 5568 ± 30 years) are responsible for the aftereffects of nuclear explosions in time. So far, no data are available on increase and distribution of C^{14} in the "exchange-

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Increase of the content of ...

basin." It is, however, known that from 1953-1955 onward the C^{14} content in the atmosphere increased by 4.3-5% per year, irrespective of the place where nuclear explosions had occurred, and increased by 25-30% until 1959. The ash tree examined was felled near Moscow (Zvenigorod forest) at the end of June, 1960. It had a diameter of 19 cm and an age of 45 years. 15 annual rings (years 1959-1945) were recovered from 2-3 cm thick targets. Separate wood samples from the individual years were burned in an oxygen stream, and ethane was synthesized from the resultant CO_2 (for methods cf. Ref. 10, authors' paper, Geokhimiya no. 8, 3, 1956 and 663, 1959). Calcium carbide containing the carbon from the wood samples was decomposed by distilled Artesian water from a depth of 160 m for the purpose of obtaining acetylene and eliminating contamination by tritium which is also due to nuclear explosions. To remove traces of radon and its decay products, the resultant gas was stored in glass containers for at least 25 days (= 6-7 fold $T_{1/2}$ of Rn which is 3.82 days) prior to counting. C^{14} activity in ethane was determined in a proportional counter filled with gas (gas pressure: 2 atm). 2 g of carbon were contained in the whole counter. Apparatus and methods applied are

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described in the authors' paper of Ref. 10. The wood of a 30-year-old birch felled in Kamchatka in 1908 was used as a recent standard, to which the activity of the test samples was referred. Fig. 2 shows the increase of the C^{14} content in the ash. Δ^{14} denotes the difference between the activity of the ash samples and that of the standard (zero level). The authors conclude therefrom that the C^{14} content in the annual rings of the ash has rapidly increased between 1956 and 1960, i. e., by 5.5% per year on the average. The difference between the zero levels of ash and birch is due to the "industrial effect", i.e., dilution of atmospheric CO_2 by inactive carbon owing to the intense combustion of coal and petroleum in the course of several decades. The C^{14} increase in the ash thus corresponds to that in the atmosphere during the last few years. The authors point out that this content may further increase by dislocation from the stratosphere into the troposphere. Though a reduced absorption of C^{14} from the atmosphere by plants was expected because of fractionation of the carbon isotopes during photosynthesis, the effect

Increase of the content of ...

of C^{14} separation becomes less clear owing to the latitude effect and, possibly, the seasonal effect. The C^{14} content in plants thus increases more than in the atmosphere. The authors express their gratitude to V. Ye. Moskaleva, V. M. Kutyurin, D. F. Frantsuzov, and R. V. Bronskaya for selection and supply of wood samples. There are 3 figures and 10 references: 3 Soviet-bloc and 7 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref. 8, E. H. Willis, Nature, 185, no. 4712, 552 (1960).

SUBMITTED: January 2, 1961

Increase of the content of ...

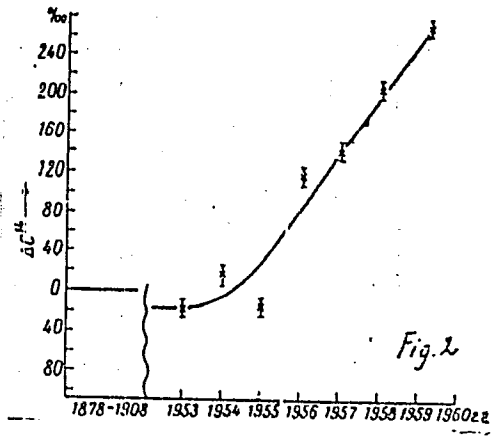

Fig. 2

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GROSVAL'D, M.G.; DEVIRTS, A.L.; DOBKINA, E.I.

History of the Holocene in Franz Josef Land. Dokl. AN SSSR 141 no.5:1175-1178 D '61. (MIRA 14:12)

1. Institut geografii AN SSSR i Institut geokhimii i analiticheskoy khimii im. V.I. Vernadskogo AN SSSR. Predstavleno akademikom A.P. Vinogradovym.
(Franz Josef Land--Paleogeography)

VINOGRADOV, A.P.; PEVZNER, A.L.; DOBKINA, E.I.; MARKOVA, N.G.

Determination of the absolute age by the C^{14}. Report No.3. (MIRA 15:7)
Geokhimiia no.5:387-402 '62.

1. V.I. Vernadskiy Institut of Geochemistry and Analytical Chemistry, Academy of Sciences, U.S.S.R., Moscow.
(Radiocarbon dating)

NEYSHTADT, M.I.; DEVIRTS, A.L.; MARKOVA, N.G.; DOBKINA, E.I.; KHOTINSKIY, N.A.

Dating of holocaine deposits by radiocarbon and pollen analysis. Dokl. AN SSSR 144 no.5:1129-1131 Je '62. (MIRA 15:6)

1. Institut geografii AN SSSR i Institut geokhimii i analiticheskoy khimii AN SSSR. Predstavleno akademikom I.P.Gerasimovym.
(Holocaine) (Geological time)

CHEBOTAREVA, N.S.; SEREBRYANNIY, L.R.; DEVIRTS, A.L.; DOBKINA, E.I.

Absolute age of low river terraces in the central part of the Russian Plain. Izv. AN SSSR. Ser. geog. no.4:70-74 Jl-Ag '62. (MIRA 16:5)

1. Institut geografii AN SSSR i Institut geokhimii i analiticheskoy khimii AN SSSR imeni V.I.Vernadskogo.

(East European Plain--Terraces (Geology))
(Geological time)

SEREBRYANNYY, L.R.; DEVIRTS, A.L.; MARKOVA, N.G.

New data on the absolute age of Allerod sediments in the vicinity of Leningrad. Biul.Kom.chetv.per. no.27:151-153 '62.
(MIRA 16:4)
(Leningrad region--Geological time)

LAVRUSHIN, Yu.A.; DEVIRTS, A.L.; GITERMAN, R.Ye.; MARKOVA, N.G.

Primary data on the absolute chronology of principal events in the Holocene of the northeastern part of the U.S.S.R. Biul.Kom. chetv. per. no. 28:112-126 '63. (MIRA 17:5)

VELICHKO, A.A.; DEVIRTS, A.L.; DOBKINA, E.I.; MOROZOVA, T.D.; CHICHAGOVA, O.A.

First determinations of the absolute age of fossil soils in the loss of the East European Plain. Dokl. AN SSR 155 no. 3:555-558 Mr '64. (MIRA 17:5)

1. Institut geografii AN SSSR i Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo AN SSSR. Predstavleno akademikom I.P.Gerasimovym.

ACC NR: AP7002296 SOURCE CODE: UR/0020/66/168/004/0900/0903

AUTHOR: Vinogradov, A. P.; Dovirts, A. L.; Dobkina, E. I.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy AN SSSR (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: C^{14} concentration in the atmosphere at the time of the Tunguska Catastrophe and antimatter

SOURCE: AN SSSR. Doklady, v. 168, no. 4, 1966, 900-903

TOPIC TAGS: meteorite, antimatter / Tunguska meteorite

ABSTRACT:

In 1965 Cowan, Atlury and Libby analyzed a number of hypotheses on the cause of the explosion of the Tunguska meteorite; they concluded that the antimatter hypothesis most satisfactorily explained all the accompanying phenomena. If antimatter, in fact, was responsible, there should have been an associated increase of radioactive carbon. Accordingly, this paper describes an investigation for determination of C^{14} in tree rings in the immediate area of the Tunguska explosion (60 km to the south of the epicenter). The 140-year-old tree was cut in 1961. The growing season for the tree was such that any increase of C^{14} would be reflected in the tree ring for 1908. Other rings also were studied -- 1885-1890 (as a control), 1894, 1901, 1907,

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UDC: 550.4

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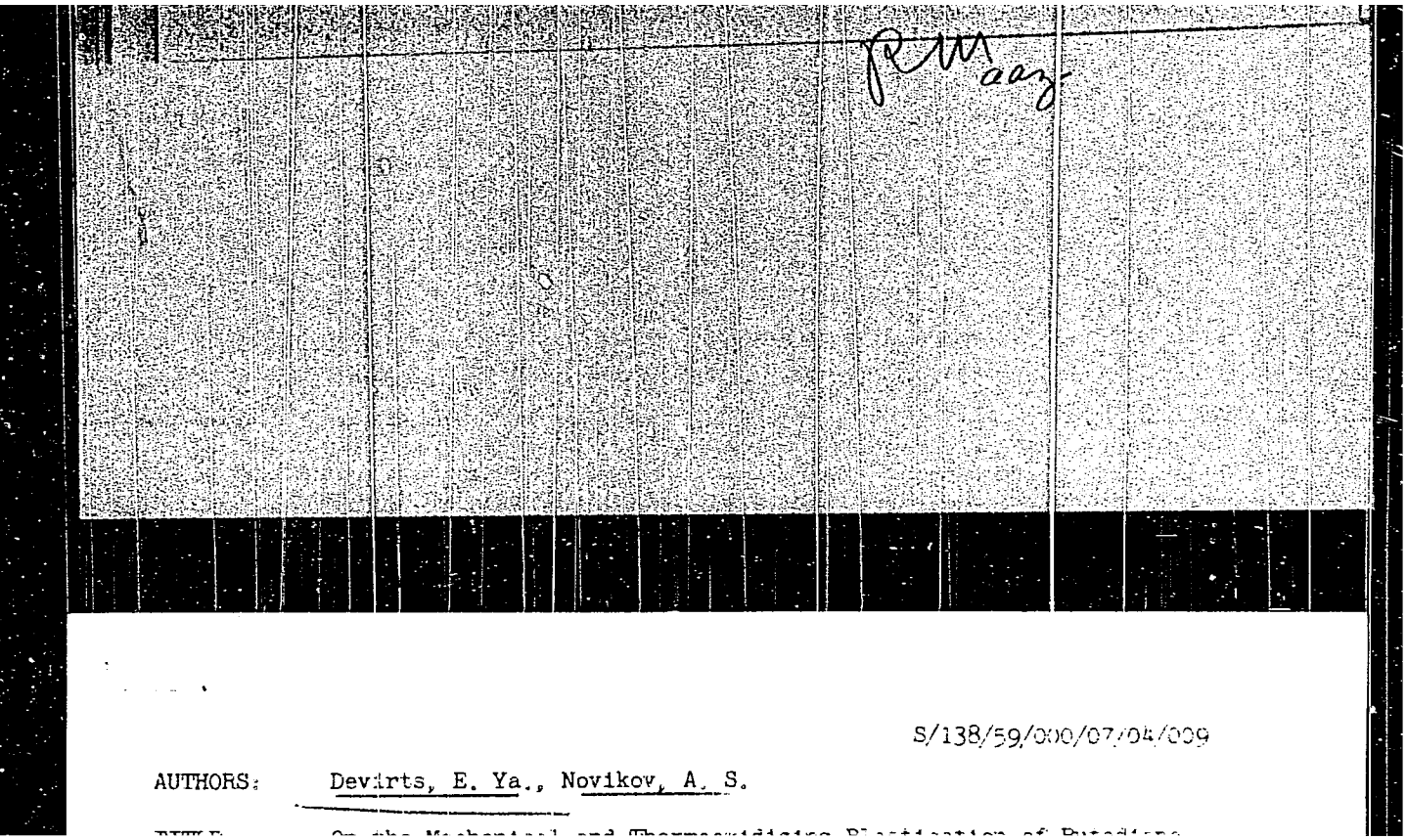
ACC NR: AP7002296

1908, 1909, 1910, 1913. All other factors which could account for increases or variations of C^{14} content were taken into account. No evidence was found on this basis which would justify the assertion that the so-called Tunguska catastrophe was related to the penetration of antimatter into the earth's atmosphere. Orig. art. has: 3 figures. [JPRS: 37,397]

SUB CODE: 20,03 / SUBM DATE: 15Mar66 / ORIG REF: 008 / OTH REF: 008

Card 2/2



S/138/59/000/07/04/009

AUTHORS: Devirts, E. Ya., Novikov, A. S.

On the Mechanical and Thermooxidizing Plastication of Butadiene-Nitrile Rubbers

and from the presence of a linear dependence between the number of breaks in the chain and the time of plastication. The change in the hardness is presented in the graphs, Figures 1 and 5, and the other relationships are shown in Figures 2, 3, and 4. As to the thermooxidizing plastication of the SKN-18 and SKN-26 rubbers, two processes take place simultaneously in this case: destruction and structuralizing. Hereby, the structuralizing process prevails. In the case of the SKN-40 rubber, only the structuralizing process takes place. Therefore, the main technical method of plastication of the butadiene-styrene rubbers, i. e., the thermooxidizing plastication is not applicable to the butadiene-nitrile rubbers. In summarizing the results of the experiments the authors state that the mechanical plastication of the butadiene-nitrile rubbers is characterized by monotonously declining curves of changes in the hardness, elasticity (according to Defoe), and characteristic tenacity with an increase in the plastication duration. The mechanical plasticates obtained in the processing on the rollers for a period of 10 to 20 min, are completely soluble in benzene. The hydrodynamic coefficient k', at the beginning of the plastication (after 20 min) drops abruptly, and then with an increase in the duration of the plastication to 120 min, hardly changes at all. It can be seen from the obtained experimental

S/138/59/000/07/04/009

On the Mechanical and Thermooxidizing Plastication of Butadiene-Nitrile Rubbers

results that the rate of the mechanical and thermooxidizing plastication of the butadiene-nitrile rubbers is determined mainly by the content of nitrile groups in them. However, opposite regularities are noted. With an increase in the nitrile of acrylic acid content, the rate of the mechanical plastication increases, whereas in the thermooxidizing plastication the rate of destruction decreases, and the role of the structuralizing process increases. The structuralizing processes are most pronounced in the SKN-40 rubber and least in the SKN-18. The SKN-26 rubber occupies an intermediate position, coming close to the SKN-18 rubber. There are 7 graphs, 7 references: 4 Soviet, 3 English.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

Card 3/3

15-9210 also 2109, 2209

S/138/59/000/011/004/011
A051/A029

AUTHORS: Devirts, E. Ya.; Novikov, A. S.

TITLE: The Effect of Oxidation-Reduction Systems on the Thermo-Oxidizing Mastication of Butadiene-Nitrile Rubbers

PERIODICAL: Kauchuk i Rezina, 1959, No. 11, pp. 17-20

TEXT: An experimental study was conducted on accelerating the thermomastication process of СКН(SKN) rubbers by introducing into the latex an oxidation-reduction system consisting of dimethylphenylparacresol and the salts of iron. This results in the formation of SKN thermomasticated rubbers (Ref. 1). The structural transformations of SKN rubbers in thermo-oxidizing mastication in the presence of the oxidation-reduction system was also investigated and the results are submitted in this article. The effect of the molecular structure on the properties of the vulcanizates is pointed out. The following rubber trade marks were studied: SKN-18, SKN-26, SKN-40. The experimental conditions are outlined and the optimum dosages of dimethylphenylparacresol used for each type of rubber are listed. Figures 1-6 indicate the changes in the hardness and elasticity,

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S/138/59/000/011/004/011
A051/A029

The Effect of Oxidation-Reduction Systems on the Thermo-Oxidizing Mastication of Butadiene-Nitrile Rubbers

according to Defoe, of the experimental and serial rubbers tested, depending on the duration and the temperature of the thermal mastication process. Several conclusions are drawn from the experimental results: 1) the processes of destruction and structuralizing take place simultaneously in thermal mastication of the tested SKN-18 and SKN-26 rubbers containing dimethylphenylparacresol, and also in the case of similar mass-produced rubbers, but the rates of these processes in both cases differ greatly. There is a considerable increase in the destruction process, and a decrease of the structuralizing process to a great extent in the case of the experimental rubbers. The reverse is seen in the mass-produced rubbers. It is stated that by using the oxidation-reduction system consisting of dimethylphenylparacresol and the salts of iron, the considerable increase in the destruction rate and the decrease of the structuralizing process makes it possible to use this method in industry for SKN rubbers. 2) In the case of the SKN-40 rubber a thermal masticated rubber having a hardness of less than 1,000 g according to Defoe is impossible to obtain with the oxidation-reduction system. SKN-18 has the highest rate of destruction, whereas

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The Effect of Oxidation-Reduction Systems on the Thermo-Oxidizing Mastication of Butadiene-Nitrile Rubbers

SKN-40 rubber has the lowest, since with an increase in the number of nitrile groups in the polymer the rate of the destruction process decreases and the rate of the structuralizing process increases. 3) It was found that with an increase in the temperature of the thermal mastication the destruction process rate increases, but at the same time the role of the structuralizing process becomes more apparent. The optimum temperature of the thermal mastication process was found to be 130°C for the SKN-18 and SKN-26 rubbers. In the case of the SKN-40 rubber the optimum temperature was 140°C. 4) From a comparative study of the rubbers masticated by thermo-oxidation and masticated mechanically, having the same hardness according to Defoe, it was found that the vulcanizate mixtures based on the thermo-masticated rubbers of the experimental butadiene-nitrile rubbers are somewhat surpassed in their durability and elasticity by similar vulcanizates from the mechanically masticated rubbers. However, the indices obtained for the vulcanizates of the thermo-masticated rubbers are sufficiently high for use in industry. There are 3 tables, 9 graphs and 4 Soviet references.

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S/138/59/000/011/004/011
A051/A029

The Effect of Oxidation-Reduction Systems on the Thermo-Oxidizing Masti-cation of Butadiene-Nitrile Rubbers

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

Card 4/4

36564

S/081/62/000/006/110/117
B168/B101

15.9130

AUTHORS: Devirts, E. Ya., Kaplun, M. G., Nudel'man, Z. N., Novikov, A. S.

TITLE: Chemical mastication of natural and butadiene-styrene rubbers

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 692, abstract 6P560 (Tr. N.-i. in-ta rezin. prom-sti, sb. 7, 1960, 3 - 16)

TEXT: Methods of producing the chemical plasticizers peptone 22 (I) and rhenacite V (II) have been worked out and these substances have been synthesized under laboratory conditions. I, II and imported rhenacite IV (III) were tested as accelerators for the mastication of natural rubber and SKS-30A (SKS-30A). I, II and III are effective chemical plasticizers for mastication of natural rubber in the rubber mixer at 120 - 130°C. II and III accelerate mastication of natural rubber on rollers at 70 - 80°C. I, II and III do not affect the physico-mechanical properties, the resistance to heat ageing or the swelling of rubbers. II is an effective plasticizer for SKS-30A when the rubber is being processed in the rubber mixer and on rollers. [Abstracter's note: Complete translation.]

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S/081/62/000/006/108/117
B168/B101

15.9701

AUTHORS: Devirts, E. Ya., Novikov, A. S.

TITLE: The properties of soft butadienenitrile rubbers of type DKH-40 (SKN-40) which do not require mastication

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 690 - 691, abstract 6P549 (Tr. N.-i. in-ta rezin. prom-sti, sb. 7, 1960, 17 - 24)

TEXT: The properties of a soft rubber of type SKN-40 (I) with a Defoe hardness of 900-1300 g are compared with series rubber of type SKN-40 (II) with a Defoe hardness of 1500 - 3000 g. Unvulcanized mixes of I have much greater plasticity than those of II (0.43 as against 0.24 on Karrer's scale). Vulcanized rubbers I are equal to those of type II in their physico-mechanical properties, in their frost-resistance coefficient at -15°C, in their brittle point, in their heat ageing coefficient and heat resistance at 100°C and in their swelling in a benzine-benzene mixture (3:1); they show a somewhat higher specific and residual elongation and also lower moduli (200%). Vulcanized rubbers I are more resistant when

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The properties of soft...

stored under warehouse conditions for 9 months than are those of type II. When I is used mechanical mastication, with its heavy demands on labor and power, is no longer necessary. In order to ensure that mixtures of SKN-40 can be prepared in the rubber mixer, it is necessary to produce I with a Defoe hardness of 700 - 1000 g. [Abstracter's note: Complete translation.]

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85657

S/138/60/000/009/005/012
A051/A029

11.2211

AUTHORS: Devirts, E.Ya.; Novikov, A.S.

TITLE: On the Application of Dark Indene-Coumarone Resins in Rubber Mixtures

PERIODICAL: Kauchuk i Rezina, 1960, No. 9, pp. 27 - 33

TEXT: A study was conducted for determining the possibilities of applying Soviet-manufactured indene-coumarone resins in rubber mixtures. Until the present time these resins were used only in the enamel and dye industry, in building materials etc. The quality of the Soviet resins are indexed in the MRTU (MPTU) 2261-49 standards. The authors list the various raw materials used in their production, indicating the difference which these cause in the color and softening point of the resin. The indene-coumarone resins were tested for 1) softeners in standard mixtures based on butadiene-styrene rubber CKC-30 (SKS-30), CKC-30APM-15 (SKS-30ARM-15) (butadiene-styrene regulated oil-filled rubber), nairite and butadiene-nitrile CKH-26 (SKN-26) rubber. 2) diluters (extenders) for the partial replacement of the SKS-30ARM-15 and SKN-26 rubbers and nairite. Six samples of the dark-colored resin were tested at softening points of 62 - 83°C. In testing the resin as a softener, and trying three methods for the resin introduction: in

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S/138/60/000/009/005/012
A051/A029

On the Application of Dark Indene-Coumarone Resins in Rubber Mixtures

pieces, sifted and melted, it was found that the highest tear-resistance was achieved when the resin was introduced in the filtered form and the lowest when the resin was introduced in pieces. The softening characteristics of the resin were compared to standard softeners, such as rubrax and AB (AB) resin, and it was seen that the indene-coumarone resin (dark color) is almost equivalent to the other softeners. The dark indene-coumarone resin with a softening temperature of 60 - 80°C is an effective softener for general rubber mixtures based on butadiene-styrene rubbers. It imparted favorable industrial properties to the non-vulcanized mixtures and high adhesiveness, strength and tensility indices to the vulcanizates. In applying the indene-coumarone resin the amount of sulfur and altax must be increased, whereby the optimum results are achieved at an increase in the sulfur content to 0.2 weight parts and to 0.2 weight parts of altax per every 5 weight parts of resin. Indene-coumarone resin in nairite-based rubber mixtures compared with mixtures containing vaseline oil and polydienes has almost the same softening effect as vaseline oil if applied in doses of 5 - 10 weight parts and even more so with 15 weight parts. It surpasses vaseline oil in increasing the adhesiveness. The vulcanizates of mixes containing the indene-coumarone resin are equal to those containing vaseline oil in their hardness index,

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A051/A029

On the Application of Dark Indene-Coumarone Resins in Rubber Mixtures

300% elongation modulus, thermal aging resistance at 100°C, but have higher relative and residual elongations and a tendency to an elevated tear resistance. They are inferior to vaseline-oil mixtures in their elasticity, brittleness point and frost-resistance. In testing the resin in SKN-26-based mixes and comparing them with the action of dibutylphthalate it was found that, when increasing the sulfur content to 0.1 weight parts to every 5 weight parts of the resin, the latter has about the same effect on the softening properties as dibutylphthalate. However, at larger doses of the resin than 5 - 10 weight parts its softening effect decreases. Vulcanizate mixtures containing 10 - 25 weight parts of the resin have the same modulus at a 200% elongation, the same temperature stability and heat--aging resistance as mixtures containing the same amount of dibutylphthalate. The tear-resistance, hardness index, tenacity, relative and residual elongation are higher and the elasticity and frost-resistance lower. The resin can be used as a diluter (extender) in mixtures of general use based on butadiene-styrene rubbers, nairite and butadiene-nitrile rubbers in the dosage of 5 weight parts, which ensures a saving on the amount of rubber consument. In replacing 5 - 10 weight parts of SKS-30 ARM-15 rubber mixture with the resin the plasticity increases somewhat. In replacing 10 weight parts of the mix with the resin all the proper-

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ties of the mixture are retained, except for a small drop in tenacity. The nairite-based mixtures change their properties in accordance with the amount of the nairite replaced by the resin. SKN-26-based mixtures when replaced by the resin show a slight increase in plasticity. Five weight parts replaced by the resin hardly changes the properties at all, and 10 - 15 weight parts causes a drop in tenacity, in the modulus at 200% elongation, elasticity, the frost-resistance coefficient, brittleness point, an increase in the relative and residual elongation, aging and temperature-resitance coefficients, maintaining the same hardness index, tear-resistance and swelling. There are 7 tables and 7 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut resinovoy promyshlennosti (Scientific-Research Institute of the Rubber Industry).

15 9201

26990

S/138/61/000/005/004/006
A051/A129

AUTHORS: Novikov, A. S., Devirts, E. Ya., Esman, P. I., Petrova, T. K.

TITLE: The properties of soft butadiene-nitrile rubbers and the application of these in the production of rubber articles

PERIODICAL: Kauchuk i rezina, no. 5, 1961, 20 - 26

TEXT: In the last few years, butadiene-nitrile rubber (СКН-SKN) characterized by a high oil- and gasoline-resistance has been widely used in the rubber industry. However, its application is difficult due to its low initial plasticity (1,500 - 3,000 g according to Defoe) In 1955 the NIIRP began work on the production of a soft SKN-40 rubber not requiring mastication. While testing an experimental batch at the NIIRP and at the "Kauchuk" Plant, it was established that due to the application of the soft SKN-40 rubber with a hardness of 900 - 1,300 g the mechanical mastication stage is eliminated and the productivity of the mixing rollers is increased. However, the mixture of the SKN-40 rubber with a hardness of 900 - 1,300 g cannot be produced in the rubber-mixers. During 1959 - 60 experimental-industrial batches of soft butadiene-nitrile rubbers were produced of the following grades: СКН-18 (SKN), SKN-26 and SKN-40. The technological process for

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the production of the soft SKN rubbers does not differ from mass-production, excepting a lower productivity of the drying unit. Experimental soft SKN rubbers were tested at the NIIRP and at rubber article plants. All the produced experimental batches correspond to ГОСТ 7738-55 (GOST 7738-55) for mass-production SKN rubber in their chemical composition and have a much lower hardness (650 - 1,000 g) than the mass-produced rubbers (1,500 - 3,000 g). Comparison showed that experimental soft SKN-40 rubber is almost equivalent to Perbunan 3810 in its tear resistance, residual elongation, modulus, hardness, brittle temperature, thermal aging resistance, temperature resistance, swelling in a mixture of gasoline-benzene, and surpasses Perbunan 3810 in its relative elongation, rupture resistance, elasticity and frost resistance at -15°C. The experimental SKN-40 rubber surpasses also Heickar 1041 in the same indices as Perbunan 3810, and is also characterized by a much higher rate of vulcanization and higher values of tear resistance and moduli. The experimental soft rubber SKN-26 as compared to the English Heickar 1043 is characterized by a much higher rate of vulcanization and an elevated tear resistance. Compared to Perbunan 2810, the experimental soft SKN-26 has a somewhat higher rate of vulcanization and almost the same tear resistance in optimum vulcanization. The soft SKN-18 surpasses Paracryl AJ in its tear resistance and hardly differs at all from

it in other properties. The soft SKN rubbers were tested under industrial conditions used in commercial articles at the rubber article plants. The authors conclude that vulcanizates from soft SKN rubbers with a Defoe hardness of 700 - 1,000 g compared to vulcanizates from mass-produced rubbers are characterized by a lowered rate of vulcanization, somewhat lowered values of tear resistance and moduli. The vulcanizates of the soft SKN-18 rubber have also a lower frost resistance coefficient and elasticity. All other properties are almost equivalent. By increasing the sulfur content or the accelerators, an increase in the rate of vulcanization is achieved for mixtures of soft SKN rubbers, and in improvement in the resistance properties of the vulcanizates based on them. Due to the use of soft SKN rubbers in the production of rubber articles the cumbersome and energy-consuming stage of mechanical mastication is eliminated and the output of the mixing rollers is increased. There are 3 graphs and 5 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

15.9130

28801
S/133/61/000/009/005/011
A051/A129

AUTHORS: Devirts, E. Ya., Novikov, A. S.

TITLE: Effect of softening temperature of indene-coumarone resins on the properties of mixtures based on butadiene-styrene rubber and nairite

PERIODICAL: Kauchuk i rezina, no. 9, 1961, 19 - 21

TEXT: The effect of softening temperature was investigated for Soviet-produced indene-coumarone resins on their behavior as softeners and solvents of СКС-30 АРМ-15 (SKS-30 ARM-15) rubber mixes. The data obtained (Table) revealed that with an increase in temperature of resin softening the plasticity of the mixtures drops. The resin softening temperature has a significant effect on the physico-mechanical properties of the standard vulcanizate mixes of SKS-30 ARM-15 rubber. An increase in this temperature results in an increase in the tear-resistance, standards at 300% elongation and rupture-resistance under normal and elevated temperatures, the hardness of the vulcanizates increases regularly according to TM-2; the recoil elasticity and temperature of brittleness drop. Furthermore, the softening temperature of the resins has no effect on certain other properties of the given vulcanizate, such as the relative and residual elongation, frost-re-

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Effect of softening temperature of...

sistance coefficient at -25°C, temperature-resistance at 100°C, thermal-aging resistance at 100°C over a period of 3 days, and crack-growth resistance. By using a certain type of resin the required combination of properties can be achieved for the raw mixtures and vulcanizates. An increase in the softening temperature improves the mechanical properties of the vulcanizates: the tear-resistance, module at 300% elongation, rupture-resistance at normal and elevated temperatures. It is concluded that: 1) the softening temperature of the indene-coumarone resins within a range of 60 - 120°C has a significant effect on the properties of the nonvulcanized mixtures of SKS-30 ARM-15 rubber and nairite and also on the mechanical properties of their vulcanizates; 2) an increase in the softening temperature of the resin reduces the plasticity of the standard mixtures based on SKS-30 ARM-15 rubber and nairite, whereas the mechanical properties of these vulcanizates are improved. There are 5 figures, 1 table and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: Compounding ingredients Ed. II, New York, 1947; M. Yeiger, India Rubb. World, 111, no. 3, 312 (1944).

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

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S/138/61/000/009/005/011
A051/A129

Effect of softening temperature of...

Table. Characteristics of tested samples of indene-coumarone resins

Indices	Number of sample							
	1	2	3	4	5	6	7	8
Softening temperature, °C	62	68	79	89	97	103	112	123
Ash content, %	0.65	0.39	0.70	0.75	0.54	0.34	0.40	0.37
Moisture content, % . . .	0.22	0.25	0.22	0.22	0.22	0.22	0.22	0.22
Solubility in benzene, %	99.81	99.96	99.76	99.96	99.91	99.94	99.92	99.94
Reaction with phenolphthalein and methyl orange . . .	neutral							

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28174

S/190/61/003/010/001/019
B130/B110

11.2211

AUTHORS: Devirts, E. Ya. Novikov, A. S.

TITLE: Oxidation of butadiene-nitrile rubber

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 10, 1961, 1441-1445

TEXT: The authors studied the oxidation of butadiene-nitrile rubber in the presence of inhibitors. They examined rubbers of the types СКН-18 (SKN-18) (I), СКН-26 (SKN-26) (II), and СКН-40 (SKN-40) (III) in the form of films in a micro-oxidation device. The film thickness was 0.8 - 1mm. The oxygen absorption was determined with an accuracy of 0.01 milliliter. Structural changes during the oxidation were evaluated from the change of solubility in benzene, the intrinsic viscosity, and the hydrodynamical parameter k'. Fig. 1 shows kinetic oxidation curves for I and II containing 2 parts by weight of Neozone D at 120, 130, and 140°C, and for III at 130, 140, and 150°C. The rate of inhibited oxidation of nitrile rubbers was found to be determined by the content of nitrile groups. The

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Oxidation of butadiene-nitrile rubber

activation energy of inhibited rubbers was determined from Arrhenius' equation. It was 29-31 kcal/mole, i. e., ~5 kcal/mole higher than the activation energy of inhibited (КС-30 (SKS-30), and ~10 kcal/mole higher than that of (КБ (SKB) rubber. The structural changes are also determined by the content of nitrile groups. In II and III, a structuration process mainly occurs during oxidation; in I, at first a destruction process prevails, and only in later stages, a structuration process occurs. A correlation was found to exist between the behavior of SKN rubbers and thermo-oxidative mastication. There are 5 figures, 1 table, and 7 references: 6 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: I. R. Shelton, H. Winn, Rubber Chem. and Technol. 19, 696-711, 1946.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

SUBMITTED: September 30, 1960

Card 2/4

DEVIRTS, E.Ya.; NOVIKOV, A.S.

Properties of butadiene-nitrile rubbers produced abroad. Kauch. i rez. 20 no.1:4-6 Ja '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Rubber, Synthetic) (Butadiene)

DEVIRTS, E.Ya.; NOVIKOV, A.S.; Prinimala uchastiye SHELAGINA, L.

Investigation of the structure of pure gum vulcanizates from SKS-30 rubber containing indene-coumarone resins. Kauch. i rez. 20 no.10:11-14 O '61. (MIRA 14:12)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Gums and resins, Synthetic)
(Rubber, Synthetic)

37175

S/138/62/000/004/003/008
A051/A126

15.9130

AUTHORS: Devirts, E.Ya.; Tomchin, L.B.; Novikov, A.S.

TITLE: The use of petroleum-polymer resin as a softener of rubber mixes

PERIODICAL: Kauchuk i rezina, no. 4, 1962, 8 - 10

TEXT: A study was made at the Scientific Research Institute of the Rubber Industry, on the possibilities of using petroleum-polymer resin as a softener in rubber mixes. The resin is a light-colored, hard substance with the following physico-chemical properties: softening temperature, 70°C; coloring according to the iodinometric scale 35; aqueous extraction reaction, weakly--alkaline; solubility in benzene, complete; molecular weight, 666; unsaturation, 35.6%. Experiments showed the resin to be an equivalent to the polydienes and to supersede rubrax. CKC -30 (SKS-30)-mixes containing this resin have no tendency to scorching, and have elevated adhesive strength. The rate of vulcanization is decreased, due to the unsaturated nature of the petroleum-polymer resin, and the tear-resistance is increased. The following conclusions were drawn: the petroleum-polymer resin is a good softener for mixes of general use, based on SKS-30. When using the resin instead of the softeners usually employed, the

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The use of petroleum-polymer.....

adhesive strength of the mixes is improved and the mechanical properties of the rubbers improve at the same time. The petroleum-polymer resin can be used instead of colophony in mixes based on butadiene-styrene rubbers, without changing the properties of the mixes and the vulcanizates. There are 3 tables and 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of the Rubber Industry)

B/138/61/000/008/004/007
A051/A126

AUTHORS: Devirts, E. Ya., Novikov, A. S.

TITLE: The effect of the sulfur content in indene-coumarone resin on the properties of rubber mixes

PERIODICAL: Kauchuk i rezina, no. 8, 1962, 12 - 14

TEXT: A study was made of the sulfur content in dark indene-coumarone resins complying with all the requirements of GOST 9263-59, i.e., moisture content not over 0.4%, ash not more than 1.5%, acidity or alkalinity not over 0.05%; on the properties of rubber mixes (initial plasticity, tendency to scorching, rate of vulcanization), and on vulcanizates; to identify the cause of an elevated scorching tendency in the rubber mixes. The sulfur content in the indene-coumarone resin has very little effect on the initial plasticity of standard mixes based on СКС-30 АРМ-15 (SKS-30 ARM-15). The former has a noticeable effect on the tensile strength and tear resistance of the vulcanizates. It has very little effect on the modulus at 200% elongation, the relative and residual elongation, the TM-2 hardness, recoil elasticity, brittleness temperature, frost-resis-

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S/138/62/000/008/004/007
A051/A126

The effect of the sulfur content in...

tance coefficient at -25, -35°C, temperature resistance coefficient at 100°C (for 3 days and nights), of standard mix vulcanizates based on the SKS-30 ARM-15. The conclusion follows that the quality evaluation of indene-coumarone resin should be conducted according to the sulfur content as well as the requirements of GOST 9263-59. Indene-coumarone resin intended for use in the rubber industry should not contain more than 2% general sulfur as higher quantities increase the scorching tendency, reduce the tensile strength and tear resistance. There are 2 tables and 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of the Rubber Industry)

Card 2/2

DEVIRTS, E.Ya.; NOVIKOV, A.S.

Effect of sulfur content of coumarone-indene resins in the characteristics of rubber mixtures. Kauch.i rez. 21 no.8: 12-14 Ag '62. (MIRA 16:5)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Rubbers, Synthetic--Testing) (Coumarone-indene resins)

YEVSTRATOV, V.F., doktor tekhn. nauk, red.; DEVIRTS, E.Ya., red.

[Frictional wear of rubber] Friktsionnyi iznos rezin; sbornik statei. Moskva, Khimiia, 1964. 271 p. (MIRA 17:12)

1. Nauchno-tekhnicheskoye soveshchaniye po friktsionnomu iznosu rezin. Moscow, 1961.

L 07082-67 EWT(m)/EWP(f)/EWP(t)/ETI IJP(c) JD/WW/HW/JT/GD

ACC NR: AT6026918 SOURCE CODE: UR/0000/66/000/000/0169/0175

AUTHOR: Titov, F. M.; Devishenskiy, N. P.

ORG: None

TITLE: Investigation of aircraft engine turbine blades by the internal friction method

SOURCE: AN SSSR. Institut metallurgii. Vnutrenneye treniye v metallakh i splavakh (Internal friction in metals and alloys). Moscow, Izd-vo Nauka, 1966, 169-175

TOPIC TAGS: internal friction, hardness, heat resistant alloy, thermal effect, turbine blade, aircraft engine, jet engine

ABSTRACT: This paper discusses the results of investigating turbine blades and samples of heat resistant alloys by internal friction and hardness methods. Blades which had been in operation from 0 to 4,000 hours were checked for decrease in number of vibrations, while nickel alloy samples were subjected to heating and cooling cycles in order to study the influence of thermal cycling on internal friction. Tests of a wrought nickel alloy showed that the decrement of free vibrations for blades increases notably only during the first 400-500 hours of service. The dispersion decrement (of internal friction) for the same blades drops sharply at first and then increases in the same manner as it does for blades which have operated for 200 hours at, however, a lower value (about half as much) than for new blades,

Card 1/2

reaching a maximum in the region of 1,500-1,600 hours and remaining almost constant up to 4,000 hours. Average hardness and hardness dispersion changes very little. For cast nickel alloy the decrement of internal friction remains fairly constant while decrement dispersity increases up to 3,200 hours with little differences noted in test values for used or new blades. Hardness parameters showed that average hardness changes and rises to its highest value at 3,200 hours of operation. Dispersion of hardness for the first 800-1,200 hours of operation is substantially lower and is about one-third that for new blades. From 1,200 to 3,200 hours this value remains constant. Relationships of decrement and dispersion of decrement of internal friction to number of thermal cycles revealed an erratic pattern with the greatest fluctuations taking place between 100 and 150 cycles. This was also true for decrement and dispersion of decrement of hardness with respect to thermal cycles. One of the reasons for increased decrement values in the first 400-500 hours was surface hardening of blade material due to the forces acting on it. Those instances in which investigated parameters remained fairly constant reveal the capability of a material to scatter energy and allow it to equalize throughout (in most cases). Orig. art. has: 2 formulas and 4 figures.

SUB CODE: 11 / 10 21 / SUBM DATE: 02Apr66/ORIG REF: 015

Card 2/2 KC

L 07080-67 EWT(m)/EWP(w)/EWP(v)/EWP(k) IJP(c) WW/EM/DJ/GD
ACC NR: AT6026920 (N) SOURCE CODE: UR/0000/66/000/000/0193/0198

AUTHOR: Devichenskiy, N. P.; Titov, F. M.; Fastritskiy, V. S.

ORG: None

TITLE: Unit for semiautomatic measurement of free vibration decrements in gas turbine blades

SOURCE: AN SSSR. Institut metallurgii. Vnutrenneye treniye v metallakh i splavakh (Internal friction in metals and alloys). Moscow, Izd-vo Nauka, 1966, 193-198

TOPIC TAGS: vibration measurement, internal friction, electric measuring instrument, gas turbine, turbine blade, electronic test equipment

ABSTRACT: The unit mechanically measures the decrement of vibrations in turbine blades and converts these measurements into electrical pulses for semiautomatic determination of internal friction. The unit utilizes EID-1 and EID-2 electronic measuring devices, allowing for rapid measurement of the logarithmic decrement of free vibrations for jet engine turbine blades and utilizing the effect of eddy currents. The speed of measuring decrement with the EID-1 is about 30 times faster than by tensiometric or induction methods. One shortcoming of this unit is that the number of pulses obtained only corresponds to a constant ratio of amplitudes U_{max}/U_{min} equal to 2. Another drawback is that the use of thyraton circuits reduces measuring accuracy. An advanced measuring device without the shortcomings

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ACC NR: AT6026920

of the EID-1 is the EID-2 which has a U_{max}/U_{min} of 10/9 so the true, not average, value of vibration decrement can be measured. Operating speed of the EID-2 is somewhat slower than that of the EID-1 because it has to find the difference between the readings of two scalers whereas this difference is obtained directly in the EID-1. This is compensated for by a high accuracy of measurement and the use of relatively simple and small scalers as opposed to the cumbersome and expensive PS-10000 scaler on the EID-1. Results from testing the EID-2 device showed that it can be successfully used for nondestructive testing of parts (blades) of different materials both under experimental and plant conditions. Orig. art. has: 4 figures.

SUB CODE: 21/SUBM DATE: 02Apr66/ORIG REF: 003

Card 2/2

5(4) 11(1)

05838
SOV/76-33-10-36/45

AUTHORS: Kogarko, S. M., Devishev, M. I., Basevich, V. Ya.

TITLE: An Investigation of the Ignition of Gases in the Reaction Products of a Flame

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2345 - 2350 (USSR)

ABSTRACT: The authors investigated the retardation of ignition in mixtures of air and methane, n-butane, isooctane, (2,2,4-trimethyl pentane), and n-heptane which resulted from the combustion products of a diffusion-gas burner. For this purpose, they used a chamber which had been heated to 500-1500° at 1 atm electrically and by the combustion products of the diffusion flame. Experiments were made in an apparatus (Fig 1) which permitted automatic recording of the ignition retardation as well as an alteration of the distance between the flame and the gas entrance. Further, the absorption spectra of the hydroxyl groups were taken by means of an ISP-22 spectrograph, and the spectrogram was evaluated on an MF-2 microphotometer. The method by V. N. Kondrat'yev (Ref 2) was used to interpret the absolute concentration of the hydroxide. Results of calculation are listed in a table.

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An Investigation of the Ignition of Gases in the Reaction Products of a Flame

05838
SOV/76-33-10-36/45

It was found that within the temperature range 550-1150°C the ignition was retarded by 2-200 msec at 1 atm and depended greatly on the initial concentration of the active particles (OH radicals), i. e. a variation by one order (or more) may take place at the same temperature. The retardation of ignition is largely dependent on the distance between the gas entrance and the flame since the concentration of the OH radicals is reduced at a larger distance. It is assumed that a reduction of the apparent activation energy may be explained by an increase in the concentration of the active particles (especially of the hydroxyl). Under conditions similar to those of combustion in a turbulent gas flow (up to 1000 K) the retardations of ignition are longer than the time in which the gas remains in the zone of combustion of the hydrocarbon-air mixture. Consequently, it is assumed that combustion according to a homogeneous mechanism may be neglected in this zone since in this zone combustion obviously proceeds according to the mechanism of flame spreading. Publications by B. P. Mullin (Ref 3) and H. Sachsse (Ref 4) are mentioned here. There are 5 figures, 1 table, and 5 references,

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An Investigation of the Ignition of Gases in the Reaction Products of a Flame

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2 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki, Moskva (Academy of Sciences of the USSR, Institute of Chemical Physics, Moscow)

SUBMITTED: April 3, 1958

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5(4) SOV/20-127-1-37/65

AUTHORS: Kogarko, S. M., Devishev, M. I., Basevich, V. Ya.

TITLE: Investigation of the Influence of Active Particles of Reaction Products on the Burning Processes in a Flow (Issledovaniye vliyaniya aktivnykh chastits produktov reaktsii na protsessy goreniya v potoke)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 1, pp 137-140 (USSR)

ABSTRACT: Figure 1 shows the experimental system. A hydrogen flame burns in a tube with heated air flow. A gas (lighting gas, methane, n-butane, n-propane) is introduced at a variable distance from the flame. The temperature is measured, at which the gas ignites at a given distance from the hydrogen flame. The concentration drop of OH-particles with increasing distance from the hydrogen flame at various temperatures was determined spectroscopically (Table 1). Methane (Fig 2) at a distance of 150 mm from the hydrogen flame and an air flow rate of 25 m/sec ignites already at 500°, while ignition at a distance of 650 mm (and equal air flow rate) occurs only at 1000°. This is explained by the influence of the active particles (OH, atomic O and H) forming

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Investigation of the Influence of Active Particles of Reaction Products on the Burning Processes in a Flow SOV/20-127-1-37/65

in the hydrogen flame. These particles gradually recombine behind the hydrogen flame. If a combustible gas is introduced into the tube section, in which the concentration of such particles is still high, chemical processes take place, which accelerate ignition. Owing to this, also in the case of the activating energy of methane, 19 or 71 kcal/mol, depending on the distance from the hydrogen flame, were found. There are 4 figures, 1 table, and 2 Soviet references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: January 20, 1959, by V. N. Kondrat'yev, Academician

SUBMITTED: December 29, 1958

Card 2/2

80954
S/024/60/000/03/017/028
E081/E441

26,1000

AUTHORS: Basevich, V.Ya., Devishev, M.I. and Kogarko, S.M. (Moscow)

TITLE: Influence of Active Particles of Combustion Products on Flame Propagation Velocity in Turbulent Flow

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, Nr 3, pp 138-144 (USSR)

ABSTRACT: The apparatus is shown in Fig 1 (1 - tube, 2 - electric heater, 3 and 4 - hydrogen burners, 5 - rectifying device, 6 - mixer, 7 - jet, 8 - burner of pilot flame, 9 - stabiliser); the active particles were created by burning hydrogen either at 3 (distance (L) from tube section = 3000 mm) or at 4 (L = 400 mm). Experiments were carried out on town gas and propane. Fig 2 shows the temperature (1 and 1') and velocity (2 and 2') fields across the tube with the point O on the tube axis. Fig 3 is a photograph of propane flames (composition of mixture $\alpha = 1.4$, $T = 360°$, Re = 50000) and shows that the intensity and spread of the flame are both influenced by the concentration of active particles. Fig 4 shows the change in half-distance between maximum brightnesses (y)

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80954
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E081/E441

Influence of Active Particles of Combustion Products on Flame Propagation Velocity in Turbulent Flow

with distance along the flow axis (x), Fig 5 the influence of initial concentration of active particles on the velocity of flame propagation for mixtures of different constitution and Fig 6 the influence of initial concentration of active particles on the velocity of flame propagation at different temperatures; for Fig 4, 5 and 6 the working material was town gas. Fig 7 shows the influence of initial concentration of active particles on the flame propagation velocity in mixtures of different gases (town gas, propane and hydrogen) and Fig 8 the influence of initial concentration on the luminous intensity of the flames. The conclusions are: (1) The velocity of flame propagation in turbulent flow was increased by introducing an initial concentration of active particles from a burning reaction in the initial mixture. (2) Introduction of active particles increases the luminous intensity of the flame as a result of the increase in reaction velocity in the inception zone. There are 8 figures, 2 tables and 7 references, 4 of which are Soviet and 3 English.

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80954
S/024/60/000/03/017/028
E081/E441

Influence of Active Particles of Combustion Products on Flame Propagation Velocity in Turbulent Flow

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
(Institute of Chemical Physics, Academy of Sciences USSR)

SUBMITTED: June 25, 1959

Card 3/3

4

28379

S/124/61/000/008/030/042
A001/A101

11.7100

AUTHORS: Kogarko, S. M., Devishev, M. I., Basevich, V. Ya.

TITLE: Investigation of the effect of active particles from reaction products on burning processes in a flow

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 8, 1961, 75-76, abstract 8B526 (V sb. "3-ye Vses. soveshchaniye po teorii goreniya T. I". Moscow, 1960, 72-78)

TEXT: The authors investigated experimentally the effect of active particles forming in hydrogen diffusion flame, on the ignition of combustible mixture, boundaries of flow separation, and the flame propagation velocity in a turbulent flow. Active particles were injected in the processes investigated with different time intervals after their formation, obtaining thereby their different concentrations. For this purpose, the hydrogen burner was placed in the main air flow at different distances of the process investigated. The temperature of the combustible mixture, turbulence of the flow and concentration of hydroxyl were recorded in experiments. The investigation of ignition has shown that at different distances of ignition spot from the diffusion burner, ignition occurs at different

Card 1/2

Investigation of the effect of active ...

temperatures and correspondingly, different ignition delays. The ignition temperature varied from 500 to 1,000°C for combustible mixtures of methane, normal butane, isooctane, normal heptane with air, and ignition delay varied from 2 to 200 sec. The results of measuring the boundaries of flow separation indicate that expansion of these boundaries occurs only at high concentrations of active particles. Injection of active particles increases also the velocity of flame turbulent propagation. Moreover, it was discovered that active particles enhance the flame luminosity. In poor mixtures intensity grew 3 times, and in rich ones by 50%. There are 15 references.

V. Librovich

[Abstracter's note: Complete translation]

Card 2/2

S/120/62/000/001/004/061
E032/E514

AUTHORS: Devishev, M.I., Rakitin, D.F. and Ryabikov, S.V.

TITLE: Some features of particle track photography in connection with the simultaneous measurement of momentum and ionization in large Wilson chambers

PERIODICAL: Pribory i tekhnika eksperimenta, no.1, 1962, 28-32

TEXT: It is pointed out that the photography of Wilson chamber tracks in the GeV region leads to specific difficulties and the aim of the present paper was to investigate the possibilities of the drop-count method and to select the optimum photographic systems for use with large Wilson chambers. The experimental part of the work was carried out with a rectangular Wilson chamber (60 x 20 x 30 cm^3) and a control system which selected relativistic μ-mesons travelling in the vertical direction. Each track was photographed with two objectives on a photographic film with a resolution of 90-100 lines/mm. The chamber was filled with a 1:8 argon-helium mixture to a total pressure of 2.5 atm and a 1:4 alcohol-water mixture. The calculated drop density was 28 cm^{-1}. A determination was made of:
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Some features of particle track ... S/120/62/000/001/004/061
E032/E514

a) the resolution of the system, b) the dependence of the resolution of drop images on the magnification, c) depth of focus, d) effect of under-development of the film, and e) specific ionisation. It is concluded that with a track width of about 2 mm the ionization density can be increased to 30 drops/cm or more, since a reduction in the statistical error does not lead to an increase in the error due to overlap so long as the drops can still be counted. Under these conditions the simultaneous measurement of momentum and ionization by the drop-count method can be carried out up to a magnification ratio of about 10. With Soviet objectives and films the minimum diameter of drop images turns out to be 25-30 μ. This may be reduced to 20 μ by under-development. There are 4 figures.

ASSOCIATION: Fizicheskiy institut AN SSSR
(Physics Institute AS USSR)

SUBMITTED: May 20, 1961

Card 2/2

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S/120/62/000/002/016/047
E140/E163

AUTHORS: Bolotov, V.N., Devishev, M.I., Filatov, V.V., and Shmeleva, A.P.

TITLE: Multichannel pulse amplitude analyser for ionisation calorimeter

PERIODICAL: Pribory i tekhnika eksperimenta, no.2, 1962, 66-70

TEXT: The ionisation calorimeter is the basic instrument for determining energy of hyper-rapid particles ($E \geqslant 10^{11}$ eV) present in cosmic rays. The authors' calorimeter consists of 130 ionisation chambers with capacitive memories and output by means of a mechanical commutator. An electromagnetic oscillograph is used for registering the results on a photographic strip 120 mm in width. The dynamic range required for the record for a given chamber is of the order of 200:1, with a precision of 15% near the lower limit (20 relativistic particles). The amplifier (vacuum tube) and control circuits of the instrument are described in some detail. Two traces are photographed, apparently in the ratio of 11:1

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Multichannel pulse amplitude ...

(voltage divider 430 k - 43 k for the attenuated signal). It is considered that the error due to system instabilities will be less than 10% with calibration once a day. There are 6 figures.

ASSOCIATION: Fizicheskiy institut AN SSSR
(Physics Institute, AS USSR)

SUBMITTED: July 11, 1961

Card 2/2

V. N .; DAYON, M. I.; DEVISHEV, M. I.; DOLOGOSHEYN, B.A.; KLIMANOVA, L. F.
S. I.; SHMELEVA, A. P.

...ew Discharge Track-Detector Chamber Investigation of Characteristics of some Spark Chambers.

...port submitted for the Intl. Conf. on Cosmic Rays (IUPAP), Jaipur India, 2-12 Dec 1963.

BOLOTOV, V.N.; DEVISHEV, M.I.

Efficiency of spark chambers in recording showers of charged particles. Zhur. eksp. i teor. fiz. 45 no.5:1680-1682 N '63. (MIRA 17:1)

1. Fizicheskiy institut imeni Lebedeva AN SSSR.

L 25380-65 EWT(m) IJP(c)

ACCESSION NR: AP5002147 S/0120/64/000/006/0053/0055

AUTHOR: Bolotov, V. N.; Devishev, M. I.

TITLE: Control and supply of spark-discharge chambers used for recording charged-particle showers

SOURCE: Pribory i tekhnika eksperimenta, no. 6, 1964, 53-55

TOPIC TAGS: spark discharge chamber, cosmic ray, electron shower

ABSTRACT: An outfit for recording electron showers and testing spark-discharge chambers comprises a stack of spark chambers, above which a Pb, Al, or Cu target is placed; it is intended for generating electron showers from cosmic rays. Below the chambers, a plastic scintillator with a photomultiplier (FEU-33) is placed whose output signal, via an amplifier, is fed to a pulse shaper; the latter provides a pulse for firing a TGI1-90/3 thyratron, and the thyratron, in turn, fires a Marx impulse generator whose output is in the

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L 25380-65

ACCESSION NR: AP5002147

5

hundreds of kv. The spark-discharge chambers used are large (600 × 600 mm; gap, 100 mm); their design is described in detail. A "shower-master" circuit with gas-filled counter tubes has a delay exceeding that of a scintillator-type circuit by 100 nsec. The overall delay — from the instant of appearance of the shower in the scintillator to the instant of application of h-v impulse to the chambers — is less than 0.3 microsec. "The authors wish to thank N. A. Golubchikov, V. N. Nikolayev, M. F. Kuzmichev, and K. M. Smyslov for their assistance in building the outfit." Orig. art. has: 5 figures. [03]

ASSOCIATION: Fizicheskiy Institut AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 09Dec63 ENCL: 00 SUB CODE: EM, NP

NO REF SOV: 005 OTHER: 001 ATD PRESS: 3182

Card 2/2

ACCESSION NR: AP4033107 S/0120/64/000/002/0057/0061

AUTHOR: Bolotov, V. N.; Dayon, M. I.; Devishev, M. I.; Klimanova, L. F.; Luchkov, B. I.; Shmeleva, A. P.

TITLE: Accuracy of tracing the particle trajectory by a spark in a spark chamber

SOURCE: Pribory* i tekhnika eksperimenta, no. 2, 1964, 57-61

TOPIC TAGS: spark chamber, large gap spark chamber, cosmic ray study, particle trajectory

ABSTRACT: A qualitative investigation of the shift (translation) and angle between the spark and particle paths in a 20-cm gap spark chamber is reported. Two Ne-filled at 650 torr test chambers had a common electrode with a 50-micron-thick aluminum foil in the center. Min delay was 0.6 microsec. Tracks of mu-mesons of cosmic rays were photographed. Measurements were

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ACCESSION NR: AP4033107

performed with a parallel (130 kv) and series (65 kv) connection of the chambers with the supply surge generator. The spark thickness was 1-2 mm. It was proved that high-energy (500-600 Gev/s) particles can be measured by the "spark chamber, magnetic field" method at existing cosmic-ray stations. "The authors consider it their duty to express their gratitude to B. A. Dolgoshein for his useful comments, to P. N. Komolov, L. L. Sabsovich, and E. Chaykovskaya for their help in computer data processing, to V. A. Nikolayev, I. N. Solodnikov, and V. Lukin for their help in aligning and operating the spark chambers, and to N. V. Fedulova for her help in processing the results." Orig. art. has: 5 figures and 9 formulas.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Institute of Physics, AN SSSR)

SUBMITTED: 24Apr63 DATE ACQ: 11May64 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 004

ACCESSION NR: AP4042557 S/0056/64/046/006/1990/1995

AUTHORS: Bolotov, V. N.; Devishev, M. I.

TITLE: Shower efficiency of a spark chamber

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 6, 1964, 1990-1995

TOPIC TAGS: particle counter, particle detector, spark discharge chamber, cosmic ray measurement, charged particle trajectory

ABSTRACT: In view of the advantages of spark chambers with metallic electrodes over other charged-particle detectors, and with an aim at possible applications in cosmic-ray research, the authors determined the probability of registering an individual particle of a shower passing through the fiducial volume of such a spark chamber, and also the efficiency of shower registration and the influence of the angle of entrance into the chamber and the dependence of the efficiency on the number of particles in the shower, on the angle of

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entrance into the chamber, and on the conditions of energizing the chamber. The test setup employed was described in detail earlier (preprint FIAN, 1963; PTE, no. 6, 1964). The test results have disclosed that if several chambers are connected in series, a broad region of high-efficiency shower registration exists. The efficiency dependence on the resistance connected in series with the chamber, and is higher for series-connected than for parallel-connected spark chambers. When a large number of particles pass simultaneously through the chamber and cross its fiducial volume at different angles, the spark channel along the track develops more rapidly than the spark channels along the electric field, and the rate of the development of the former increases with decreasing particle-motion angle. It is concluded that spark chambers with metallic electrodes and with large interelectrode gaps (on the order of 100 mm) have high efficiency for the registration of showers and individual particles in showers, up to angles on the order of 40°, for simultaneous passage of several dozen particles through the chamber. "In conclusion the

ACCESSION NR: AP4042557

authors express deep gratitude to Professor A. I. Alikhanyan for continuous interest in the work and to A. P. Shmeleva for help with the reduction of the experimental data and for valuable remarks." Orig. art. has: 4 figures, 2 formulas, and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences SSSR)

SUBMITTED: 10Jan64	DATE ACQ:	ENCL: 02
SUB CODE: NP, AA	NR REF SOV: 005	OTHER: 001

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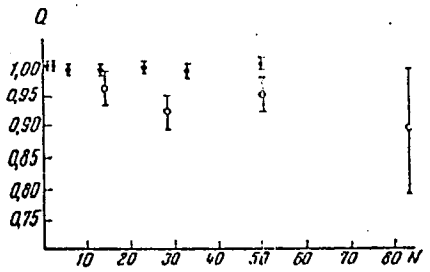
ACCESSION NR: AP4042557 ENCLOSURE: 01



Dependence of the shower efficiency on the number of particles Q passing through the fiducial volume of the spark chamber. Dots - chambers connected in series; circles - in parallel

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ACCESSION NR: AP4042557 ENCLOSURE: 02

Shower efficiency for different spark-chamber supply modes

E, kV/cm	R, kΩ						
	∞	15	5	3	1	0,1	10^{-4}
Последовательное включение камер Series							
2,6	0,53	0,98	0	0			
2,8	0,99	1	1	1	0		
3,3	0,99		1	1	0,05		
6,5						1	0
Параллельное включение камер Parallel							
7,8	0,87			0,04	0,90	0,84	0
8,4					0,97	0,92	0,50

Card 5/5

BOLOTOV, V.N., MEYLSHLV, M.I.

Efficiency of a spark transmitter in sonar investigations.
Zhur.eksp.i teor.fiz. 26 no.5:1990-1995 My '54.

1. Matematicheskiy institut imeni V.A. Steklova AN SSSR.
(Mil' [illegible])

BOLOTOV, V.N.; DEVISHEV, M.I.

Control and supply system for spark chambers recording showers of charged particles. Prib. i tekh. eksp. 9 no.6:53-55 N-D '64. (MIRA 18:3)

1. Fizicheskiy institut AN SSSR.

AKOPYAN, G.S.; BOLOTOV, V.N.; DAYON, M.I.; DEVISHEV, M.I.; KNYAZEV, V.M.; MARIKYAN, G.A.; MATEVOSYAN, K.A.; SHMELEVA, A.P.

Ionizing particles accompanying nucleons with energies of $E_0 \approx 170$ Bev. at an altitude of 2000 meters. Izv. AN SSSR. Ser.fiz. 29 no.10:1953-1955 O '65. (MIRA 18:10)

L 4489-66 EWT(m)/FCC/T IJP(c)

ACC NR: AP5024660 SOURCE CODE: UR/0048/65/029/009/1777/1780

AUTHOR: Bolotov, V.N.; Devishev, M.I.; Klimanova, L.F.; Luchkov, B.I.; Shmeleva, A.P.

ORG: none

TITLE: Some characteristics of wide gap spark chambers and applications of such chambers in cosmic ray physics /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1777-1780

TOPIC TAGS: spark chamber, particle detector, particle track, cosmic ray particle

ABSTRACT: Recent literature on the characteristics of wide gap spark chambers is briefly reviewed from the point of view of the applicability of such chambers to problems of cosmic ray physics. The "streamer chamber" of B.A.Dolgoshein, B.I.Luchkov, and B.U.Rodionov (Zh. eksperim. i teor. fiz., 46, 1953 (1964); Doklad na konferentsii po fizike vysokikh energiy, Dubna, 1964) is also discussed briefly. The root-mean-square angle between the two tracks of the same particle successively traversing two chambers with 20 cm gaps in a direction making an angle of less than 8° with the electric field was found to be 5×10^{-4} radian. With this small angular dispersion it would be possible to measure momenta up to 550 BeV/c with the aid of a 150 cm long 10 kOe magnetic field. This angular dispersion can be decreased by improving the uniformity of the electric field and the purity of the gas, and by reducing the delay be-

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